U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE

SUBCOMMITTEE ON ENERGY

HEARING CHARTER

Priorities in the Department of Energy Budget for Fiscal Year 2006

Wednesday, April 27, 2005
10:00 am – noon
2318 Rayburn House Office Building

1. Purpose

On Wednesday, April 27, 2005, the Energy Subcommittee of the House Science Committee will hold a hearing on the Department of Energy's fiscal year 2006 (FY06) budget request.

2. Witnesses

- **Dr. Ray Orbach** is the Director of the Office of Science at DOE. He has held this position since 2002. Prior to joining the Department, Dr. Orbach was Chancellor of the University of California at Riverside.
- **Mr. Douglas Faulkner** is the Principal Deputy Assistant Secretary for Energy Efficiency and Renewable Energy (EERE). Before assuming his post in EERE, Mr. Faulkner's Federal career included service as a senior policy advisor to two Secretaries of Energy.
- **Mr. Mark R. Maddox** is the Principal Deputy Assistant Secretary for Fossil Energy (FE) at DOE. Prior to joining FE, Mr. Maddox served as senior policy advisor to the Secretary of Energy. Prior to coming to DOE in 2003, Mr. Maddox was director of communications and public affairs for a division of Lockheed Martin, Inc. that is now called Affiliated Computer Services State and Local Solutions, Inc.
- **Mr. Robert Shane Johnson** is the Deputy Director for Technology, the Office of Nuclear Energy, Science and Technology. He has previously served as Associate Director for Advanced Nuclear Research, and as the Associate Director for Technology and International Cooperation. Prior to coming to DOE, he was employed with Duke Power Company and Stoner Associates, Inc.
- **Mr. Kevin Kolevar** is the Director of the recently renamed Office of Electricity Delivery and Energy Reliability (a merger of the Office of Electricity Transmission and Distribution, and the Office of Energy Assurance) at DOE. Prior to his appointment, Kolevar served as Chief of Staff to then-Deputy

Secretary of Energy Kyle McSlarrow, and as a senior advisor to the U.S.-Canada Task Force that investigated the 2003 blackout. Before coming to DOE, Kolevar served on the staffs of Senators Spencer Abraham and Connie Mack.

3. Overarching Questions

- How does the Department determine the appropriate balance between near- and longer-term technologies in its applied programs? When technologies are proven and ready for wider use, how does the Department help get them into the marketplace? What is the appropriate role for industry in this effort?
- How is White House guidance to science and technology agencies reflected in the activities funded by the DOE budget? In particular, does the DOE budget reflect the emphasis on potentially high-payoff activities that will help achieve the long-term national goals of security and energy independence? Should other policy considerations, such as current energy prices and supplies, factor into these decisions?
- In addition, there are a series of program-specific concerns that the Committee would like to explore. See the specific issue areas and Questions to Witnesses in Section 5.

4. Background and Issues

(Background and issues are presented for DOE as a whole and then for each of the programs on which the hearing will focus.)

A) <u>OVERALL DOE R&D</u>

BACKGROUND:

The $5.4 billion DOE R&D funding request for FY06 is divided among the five offices represented at this hearing: The Office of Science (SC) funds basic research at universities and 10 National Laboratories. The Office of Science contributes over 40 percent of all Federal funds for civilian physical sciences research. The other four offices run applied R&D programs.

<u>U.S. Energy Context:</u> The applied energy R&D request of $1.95 billion represents 3.1 percent of the civilian science and technology budget.[1] The research is designed to affect the energy sector of the economy, which constituted 7.2 percent of the gross domestic product (GDP) in 2002.[2] Energy may have an even larger influence on policy than its direct economic impact, due to its implications for foreign policy, and because virtually every other product or service in the economy requires some input of energy for its production and/or delivery.

<u>DOE R&D in Budget Context:</u> The President is proposing to spend $60.8 billion on all civilian R&D in the fiscal year (FY) 2006 budget, or about 2.3 percent of the total

[1] Not including Department of Homeland Security funding.
[2] Numerator (energy expenditure) from the EIA's Annual Energy Review 2002 Table 3.4 on page 77. Denominator (GDP) from the year 2002 data in the President's 2005 Budget: *Historical Tables*, page 184.

proposed $2.57 trillion budget.[3] Of the amount proposed for total civilian R&D, 8.9 percent would go to DOE. Table 1 below breaks down the proposed DOE R&D budget.

Table 1. Fiscal Year 2005 and Fiscal Year 2006 Funding for DOE Non-Defense R&D

Account	FY05 appropriation (in millions) *	FY06 Request (in millions)	Percentage Change from FY05 Level
Science	$3,600	$3,463	-3.8%
EERE R&D	$1,029	$975	-5.3%
Efficiency R&D	$643	$621	-3.4%
Renewables R&D	$386	$354	-8.3%
Fossil Energy			
FE R&D	$572	$491	-14.2%
Clean Coal Account**	$-160	$0	
Nuclear Energy R&D	$375	$390	+4.0%
Electricity	$120	$96	-20%
Total	**$5,696**	**$5,415**	**-4.9%**

* The figures in this chart are appropriated amounts for FY05. The Administration sometimes excludes appropriations for earmarks from the FY05 base, resulting in different percentage changes from FY05 to FY06 than are shown here.

**The Clean Coal Technology Account has not received new budget authority since the early 1990s. The FY05 appropriation is the net of an appropriation from prior years of $97 million and a deferral of -$257 million to FY06. The FY06 proposal includes the advance appropriation from FY05 of $257 million, and a rescission of $257 million for a net of zero. The request also includes an advance appropriation of $257 million for FY07.

Source: President's Fiscal Year 2006 Budget Request: *Analytical Perspectives* pp. 66-67, and DOE FY06 Congressional Budget Request.

ISSUES:

Does the proposed budget strike the appropriate balance between the physical sciences and the life sciences? Funding for medical and life science research at the National Institutes of Health (NIH) has more than doubled over the past decade, while funding for research in the physical sciences has remained flat (see Figure 1). Given the contribution to the economy of physical science research through technology development and the need in biosciences for the tools created by physics research, some experts fear the balance in Federal research funding may have shifted too far. DOE is the largest single funder of non-defense physical science research.

[3] To calculate civilian R&D the Committee began with the Federal Science and Technology (FS&T) budget (*The Budget of the United States: Analytical Perspectives*, pp. 66-67) and subtracted defense and homeland security basic and applied research.

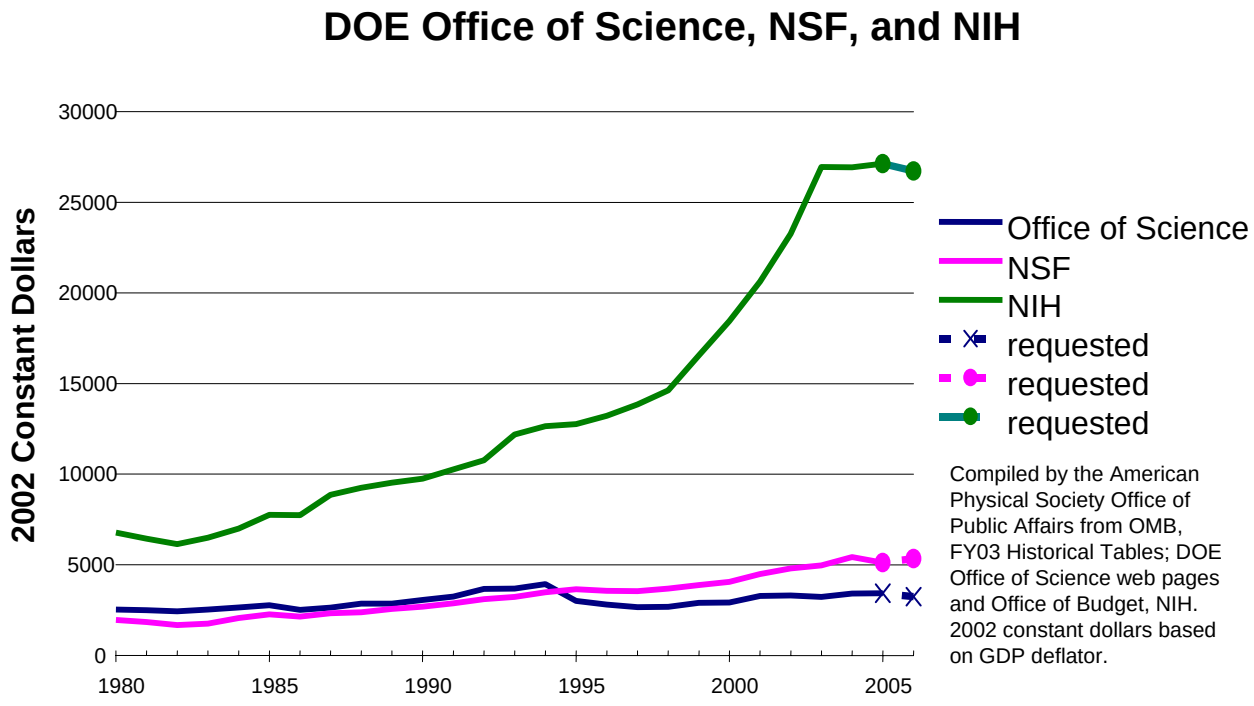

Figure 1: Past 15 years of Funding History for DOE Office of Science, NSF and NIH. This chart shows how funding levels have changed since 1980 for the programs illustrated.

What are the criteria the Department uses to "graduate" activities from the laboratory to the demonstration phase? Demonstration projects are both a useful step in developing technologies and a means to stimulate commercialization of mature technologies. However, in particular programs, such as the hydrogen initiatives and in the FutureGen project, there seems to be an emphasis on very expensive demonstration projects even though there are still major obstacles to be overcome by basic research (i.e., high technical risk). Recently the Department has characterized some of these major projects as "learning demonstrations," and said they are necessary to understand the challenges facing new technologies. The specific characteristics that distinguish a "learning demonstration" from other demonstrations are unclear. It is also unclear whether demonstrations could take place at a smaller scale that would provide the same lessons at a lower price.

Does the proposed budget strike the appropriate balance among applied energy programs? The proposed budget reflects a continuing shift in emphasis away from energy efficiency R&D, with the exception of activities supporting the President's hydrogen initiatives. Other trends are less clear. (See Figure 2.)

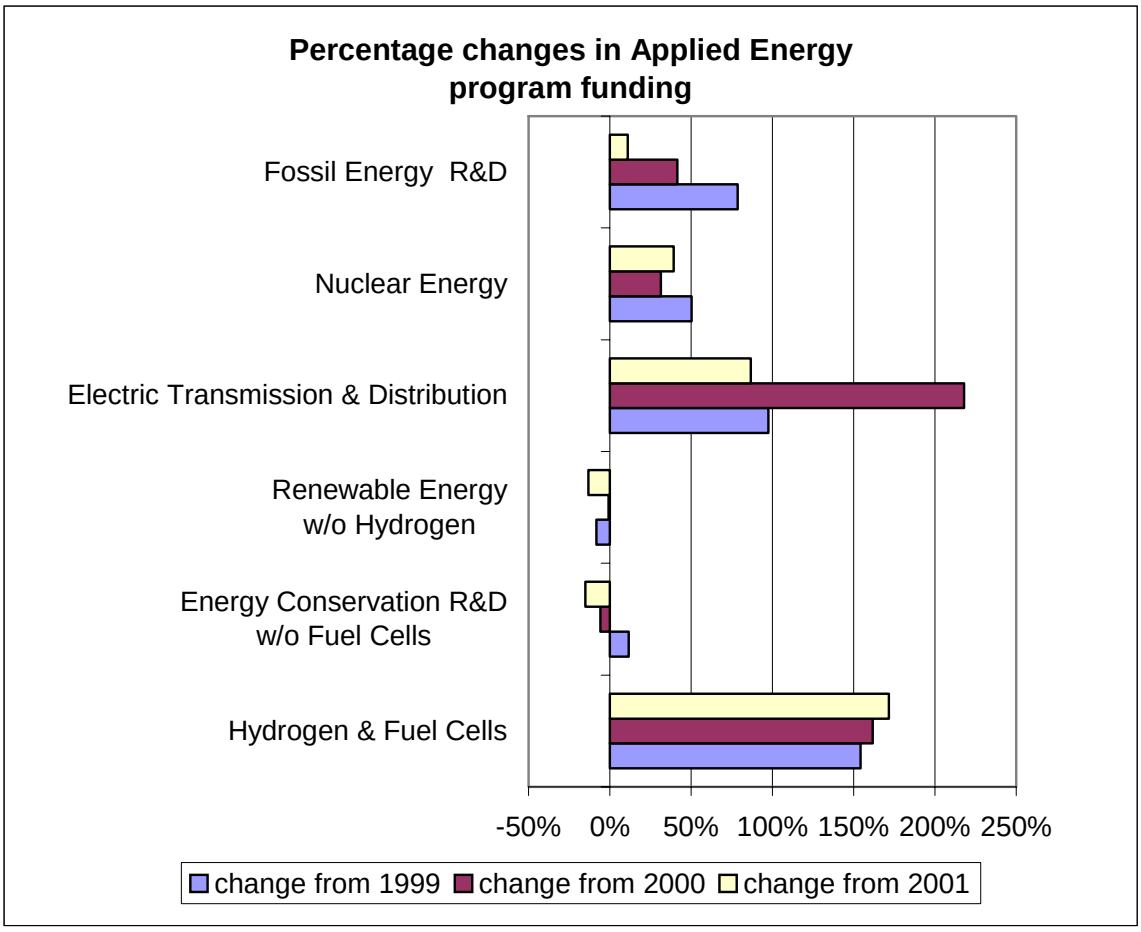

Figure 2. Percentage changes in Applied Energy program funding.
Source: Science Committee analysis of *Department of Energy Congressional Budget Request* Fiscal years 2001, 2002, 2003, and 2006.

Assuming the budget proposal is approved, since FY01, funding for hydrogen and fuel cell activities will have increased by172 percent; funding for Nuclear Energy, including shifts related to new laboratory costs, will have increased by 39 percent; and funding for Fossil Energy R&D will have increased by 11 percent (even with the elimination of oil and gas R&D programs). Funding for Office of Electricity Delivery and Energy Reliability programs, despite a decline in the request for FY06, will have increased by 87 percent, following a large increase in the wake of the August 2003 blackout. In contrast, funding for Renewable Energy R&D, excluding the Hydrogen fuel initiative, will have dropped by 13 percent; and funding for Energy Efficiency R&D (excluding fuel cells), which received a significant increase in FY02, will have been reduced by 15 percent.

Is the proposed management approach to large demonstration projects such as FutureGen and Next Generation Nuclear Plant the right mechanism to ensure efficient operation and oversight of Federally funded projects? The Fossil Energy and Nuclear Energy Offices have chosen a unique management structure for two large demonstration projects. The structure would create private-sector consortia—project integrators—to manage both oversight and operations. One immediate question posed by

this proposed arrangement is: what is the liability of the Federal government in the event that the private-sector partners walk away from the project before the demonstration is completed?

B) OFFICE OF SCIENCE

BACKGROUND:

Table 2. Fiscal Year 2005 and Fiscal Year 2006 Funding for Office of Science

Account	FY05 appropriation (in millions)	FY06 Request (in millions)	$ Change from FY05 Level	Percentage Change from FY05 Level
Total Science	$3,600	$3,463	-$137	-3.8%
HEP	736	714	-22	-3.0%
NP	405	371	-34	-8.5%
BER	582	456	-126	-22%
BES	1,105	1,146	41	3.7%
ASCR	232	207	-25	-11%
FES	274	291	17	6.0%
Other (1)	266	279	13	4.8%

Key to Abbreviations: HEP High Energy Physics, NP Nuclear Physics; BER Biological and Environmental Research; BES Basic Energy Sciences; ASCR Advanced Scientific Computing Research; FES Fusion Energy Science

Budget Highlights: As shown in Table 2, the Administration's FY06 budget request for DOE's Office of Science proposes a reduction of 3.8 percent, from the $3.6 billion FY05 enacted level. The Administration describes this as a 1.6 percent decrease if one excludes $79.6 million in Congressional earmarks. This request is 9 percent below the $3.8 billion authorized in H.R. 6, the *Energy Policy Act of 2005*, which was passed by the House on April 21, 2005 by a vote of 249 - 183.

ISSUES:

If budgets continue to decline, will research grants continue to suffer a disproportionate share of the cuts? Over the last several years, funding from the Office of Science has been approximately equally split between research grants and facilities (both operations and construction). Over the last two years, the proportion of funding for research grants has declined. The proposal for FY06 would exacerbate this trend: the cuts to research grants are proportionally larger than for facilities funding, with research grants cut 10 percent (versus a four percent cut to the Office of Science). If this trend were to continue, DOE's Science programs could potentially change in character, with DOE acting primarily as a facility provider for research activities funded by others. This trend might also have a disproportionate effect on the 15,000 graduate students supported through DOE grants. It is not clear whether DOE has made a deliberate choice to move toward a facility-based program or the emphasis on facilities is a temporary condition to cope with tight budgets.

Do the current trends imply closure of major Office of Science facilities or even an entire National Laboratory? In 2004, the Office of Science released a 20-Year

Facilities plan that prioritizes the needs of the scientific community over the next two decades. That plan implicitly assumed increases in funding similar to those included in H.R. 6, *Energy Policy Act of 2005* (and its predecessor legislation). The trends in the past two years' budget requests are at odds with the plan. The budget and future projections create a conflict between demand for new facility construction and operation of existing facilities. For example, in the Nuclear Physics budget, the need to operate the Relativistic Heavy Ion Collider (RHIC) at Brookhaven Laboratory and the Continuous Electron Beam Accelerator Facility at the Jefferson Laboratory compete for funds with the plan to construct the Rare Isotope Accelerator facility. Similar competition arises between the proposed international fusion experiment, ITER, and the operation of domestic facilities. DOE has not explained how it will deal with planning for facilities given the tight fiscal environment expected for the next few budget cycles.

How does DOE make tradeoffs between operation of existing facilities and construction of new ones? The emphasis in the FY06 request is on fully funding operations for the newest facilities such as the Spallation Neutron Source ($74 million) and the four new Nanoscale Science Research Centers ($43 million) at Oak Ridge, Sandia, Argonne, and Brookhaven National Laboratories. There are several recently constructed facilities that will have operations severely curtailed, however. For example, RHIC will only operate for 12 weeks under the proposal, seven of which are required for warm-up and calibration activities. This compares with 32 weeks during FY05. As a result, physics activities at this facility will have been reduced by 80 percent.

C)

OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY

BACKGROUND:

Table 3. Fiscal Year 2005 and Fiscal Year 2006 Funding for Office Energy Efficiency and Renewable Energy

	FY05 appropriation (in millions)	**FY06 Request (in millions)**	**$ Change from FY05 Level**	**Percentage Change from FY05 Level**
Office of EE and RE	**$1,248**	**$1,200**	**-$48**	**-4%**
Weatherization assistance	$228	$225	-$3	-1%
EERE R&D	$1,020	$975	-$45	-4%
Hydrogen and FreedomCAR in EERE	$254	$283	$29	11%
EERE R&D **other than** Hydrogen and FreedomCAR	**$766**	**$692**	**-$74**	**-10%**

Budget Highlights: The largest increase in the account is for the Hydrogen R&D Initiatives, consisting of FreedomCAR and the Hydrogen Fuel Initiative, which total $283 million ($29 million, 11 percent) within EERE. EERE R&D programs excluding hydrogen-related activities were cut by a total of $77 million (-10 percent) to $692 million. Total hydrogen funding at DOE is $358 million, up $48 million (16 percent), including contributions from the program budgets of Fossil Energy ($22 million, up $5 million or 29 percent); Nuclear Energy ($20 million, up $11 million or 124 percent); and Science ($33 million, up $3 million or 11 percent).

ISSUES:

Does the proposed budget achieve the appropriate balance among EERE programs? EERE funds R&D on a range of alternative technologies, including biomass, wind, solar, and geothermal energy. Energy efficiency and renewable energy are important future sources of energy with minimal impact on the environment. Continuing the trend of recent years' budget requests, an increasing amount of EERE funds have been requested for the President's hydrogen initiatives, including fuel and vehicle programs. Since 2001, funding for EERE R&D programs not included in the hydrogen initiatives has decreased by 13 percent. Hydrogen must be made from other energy sources. Renewables and energy efficiency R&D can contribute to the success of the transition to hydrogen: efficiency improvements in vehicles will help reduce the technical challenges facing automakers; and renewables can provide an environmentally friendly energy source for hydrogen manufacture. Both the National Academy of Sciences and the American Physical Society have noted that more R&D will be needed in alternative energy sources to help enable a hydrogen economy and to reduce greenhouse gas emissions. In the event that the technical challenges for hydrogen are too great, renewable biofuels provide one of the few alternatives to foreign oil for transportation.

What are the appropriate roles for government in long-term and near-term R&D? The Administration has emphasized long-range high-risk research as the most important role for government, especially given the well-documented difficulties in securing private funding for long-range R&D. On the one hand, the Committee has been concerned that some long-range efforts, like the transition to hydrogen, have skipped over important basic scientific research questions in a rush to commercialization. On the other hand, there appear to be numerous technologies that could benefit from additional technology transfer and deployment activities, yet DOE continues to focus on incremental research. According to the Alliance to Save Energy, technologies exist today that have the potential to save consumers over $4 billion in energy costs per year in 2010. What emphasis should the Department place on assisting efficiency technologies into the marketplace? How is DOE coordinating its existing deployment programs with its technology development efforts?

D) OFFICE OF FOSSIL ENERGY

BACKGROUND:

Table 4. Fiscal Year 2005 and Fiscal Year 2006 Funding for Office Fossil Energy R&D Programs

	FY05 appropriation (in millions)	FY06 Request (in millions)	$ Change from FY05 Level	Percentage Change from FY05 Level
Fossil Energy R&D	**$572**	**$491**	**$(80)**	**-14%**
Coal programs	$287	$300	$13	5%
Fuel Cells	$78	$65	$(13)	-17%
Oil and Gas programs	$79	$20	$(59)	-75%
Other(including Program Direction)	$128	$106	$(22)	-17%
(advance approp for FY07 of $257)				
Clean Coal Account				
Net Appropriation	**-160**	**0**	**$160**	**-100%**
Advance Appropriation	97	257		
Deferral	-257	0		
Rescission	0	-257		

Budget Highlights: The Office of Fossil Energy has two accounts that fund research, development and demonstration activities: the Fossil Energy Research and Development account, and the Clean Coal Technology account. Clean coal demonstration projects in the R&D account are limited to $68 million, essentially equal to last year's funding. The budget includes $18 million to continue design of a coal power plant with carbon dioxide exhaust capture and sequestration known as FutureGen.

The Clean Coal Technology account had large appropriations in the 1990's which were then allocated to specific projects. Several of these projects were not undertaken or cancelled, and large balances remain in the account. The appropriators deferred

(forward-funded) $257 million of this funding to FY06. The budget proposes to defer the funding again (to FY07), and to transfer the uncommitted funding to the Fossil Energy account to cover part of the $650 million proposed Federal share of the FutureGen project.

ISSUES:

What would the impact be of the proposed elimination of the oil and gas research programs? Over the last several years, the Department has consistently requested cuts to the oil and gas research programs. Evaluations of these programs by the Office of Management and Budget have consistently rated them "ineffective." H.R. 6, passed by the House of Representatives on April 21, 2005, funds an ultra-deepwater and unconventional oil and gas R&D program, using mandatory spending.

Does the proposal in the budget propose to move FutureGen from the Clean Coal program into Fossil Energy have policy implications? DOE would provide funding for the FutureGen demonstration project to build a new coal gasification power plant that would include the sequestration of carbon dioxide and potentially the production of hydrogen. Gasification turns the coal into a synthetic gas that can be burned in a turbine like natural gas, or used as a chemical feedstock. (The Clean Coal program has funded at least three previous coal gasification power plants, and gasification is commonly used in petroleum refining.) The proposed transfer of Clean Coal funds to the Fossil Energy R&D account would reduce the restrictions that help prevent cost-overruns in large demonstration projects.

Does the proposed budget for FutureGen follow the requirements in law that demonstration projects be cost shared with industry on a fifty-fifty basis? The FY06 request details the funding for this project, and shows that $620 million of the $950 million cost of the project (over 65 percent) would come from the Federal government. The Energy Policy Act of 1992 requires that demonstration programs receive no more than 50 percent of their funding from Federal sources.

What are the advantages and disadvantages to the management structure proposed for FutureGen? The current plan for FutureGen would have a consortium act as the intermediary between the Department and the organization that will own and operate the FutureGen project. This approach appears to be a departure from the Department's usual approach of signing a cooperative agreement with the project performer.

Why does DOE propose to cut funding for stationary fuel cells? Many analysts view the stationary fuel cell programs funded by Fossil Energy as an important stepping-stone to low-cost transportation fuel cells that are at the heart of the transition to a hydrogen economy. While fuel cell funding is up in the transportation programs of EERE, stationary fuel cell funding in Fossil is cut by 12 percent.

E)

OFFICE OF NUCLEAR ENERGY, SCIENCE AND TECHNOLOGY

Table 5. Fiscal Year 2005 and Fiscal Year 2006 Funding for Office of Nuclear Energy, Science and Technology.

BACKGROUND:

Account	FY05 appropriation (in millions)	FY06 Request (in millions)	$ Change from FY05 Level	Percent Change from FY05
Total NE	$375	$390	+$15	+4.0%
Nuclear energy R&D*	$171	$191	+$20	+12.0%
- Hydrogen Initiative	*$9*	*$20*	*+$11*	*+124%*
- NERI	*$2.5*	*0*	*-$2.5*	*-100%*
- NEPO	*$2.5*	*0*	*-$2.5*	*-100%*
University Reactor Infrastructure and Education Assistance	$24	$24	$0	0%
Other NE**	$180	$175	-5.0	-3%

* Also includes Nuclear Power 2010, Generation IV Nuclear Energy Systems, and the Advanced Fuel Cycle Initiative.
**Includes civilian infrastructure management such as the Idaho Facilities Management and the Idaho Safeguards and Security.

Budget Highlights: The Department's budget proposes to eliminate the Nuclear Energy Research Initiative (NERI), which funds university researchers, and the Nuclear Energy Plant Optimization (NEPO) program, which is targeted toward boosting output from existing nuclear plants. The Department has proposed that funds for NEPO be allocated to other Nuclear R&D programs and the NERI be integrated into the Department's nuclear energy R&D programs. It is unclear whether this merger will allow NERI'S focus on fundamental research questions to continue.

ISSUES:

How will the reorganization of the Idaho laboratory complex affect DOE's overall nuclear energy R&D program? In 2003, DOE proposed to revamp the contracts of Idaho National Environmental and Engineering Laboratory and the co-located Argonne West National Laboratory, and merge them into one research unit as the lead nuclear energy laboratory for the country. What role will other national laboratories with significant nuclear expertise, such as Argonne National Laboratory, play in nuclear energy R&D after Idaho National Laboratory begins operations?

What are the advantages and disadvantages to the management structure proposed for Next Generation Nuclear Plant? The current plan for NGNP would have a consortium act as the intermediary between the Department and the organization that will own and operate the project. This approach appears to be a departure from the Department's usual approach of signing a cooperative agreement with the project performer. One immediate question posed by this proposed arrangement is: what is the liability of the Federal government in the event that the private-sector partners walk away from the project before the demonstration is completed?

Does the Nuclear Energy R&D program intend to stimulate the revitalization of a domestic nuclear energy industry? The domestic nuclear industry has shrunk considerably since the last nuclear power plant was ordered in the 1970s. Will the U.S. industry be willing and able to participate under proposed plans?

F) OFFICE OF ELECTRICITY DELIVERY AND ENERGY RELIABILITY

Table 6. Fiscal Year 2005 and Fiscal Year 2006 Funding for Office of Electricity Delivery and Energy Reliability

Account	FY05 appropriation (in millions)	FY06 Request (in millions)	$ Change from FY05 Level	Percent Change from FY05
Electric Transmission and Distribution				
Research and development				
High temperature superconductivity R&D	$55	$45	-$10	-18%
Transmission reliability R&D	$16	$9	-$6	-41%
Electricity distribution transformation R&D	$5	$4	-$1	-25%
Energy storage R&D	$4	$3	-$1	-24%
Gridwise	$6	$6	-$1	-15%
Gridworks	$5	$5	$0	-8%
Total, Research and development	**$91**	**$72**	**-$20**	**-22%**
Electricity restructuring	$20	$12	-$7	-38%
Program direction	$8	$11	$3	41%
Construction	$1	$0	-$1	-100%
Total, Electric Transmission and Distribution	**$120**	**$96**	**-$25**	**-20%**

BACKGROUND:

Budget Highlights: Two new initiatives from FY04, GridWise and GridWorks, were cut by a total of $1.3 million (-12 percent). These programs are focused on developing communications and control technologies along with advanced cables, switches, and monitors to improve the transmission and distribution of electricity.

ISSUES:

What will cuts to energy storage R&D imply for other DOE programs? Energy Storage programs resided in EERE prior to the creation of the Office of Electric Transmission and Distribution and its subsequent reorganization into the Office of Electricity Delivery and Energy Reliability. The storage of energy is an important tool for improving the stability and reliability of the grid, and is vital to emerging energy

resources such as wind and solar-generated electricity. Such sources can only generate power intermittently (when the wind is blowing, for example), and they would be much more attractive if the energy they generate could be stored for later use. Funding for Energy Storage R&D in FY04 was $8.8 million, but has been cut considerably. In FY06, the request for Energy Storage again received a large cut $1 million (-25 percent) to $3 million, following on last year's cut of $4.8 million, (-55 percent) to $4 million.

How is the work of the Office of Electricity and Energy Assurance coordinated with the other applied energy offices? The work of the R&D programs in electricity transmission and distribution is important for the successful integration of the energy resources being developed in the applied energy R&D offices. Does the Office undertake any joint research efforts? How are the results of the R&D transmitted to the other offices?

5. Witnesses Questions

Witnesses have been asked to summarize the budget request for their offices focusing on activities identified as part of the Federal Science and Technology (FS&T) budget and specifically address the following issues:

Questions for Dr. Orbach

Given the reduced funding outlook for Office of Science, do you plan to revise your 20-Year Facilities Plan? How will you make the choices between building new and running existing facilities, and between facilities and funding for research grants?

Will the Department be able to simultaneously support three facilities for nuclear physics – the Relativistic Heavy Ion Collider, the Continuous Electron Beam Accelerator Facility and the Rare Isotope Accelerator? If not, when and how will the Department make a decision about the future of its nuclear physics facilities?

Given limited funds, many in the fusion research community have indicated that the U.S. should drop its participation in ITER if it would require deep cuts in funding for the domestic program. Do you agree? If we do go ahead with ITER, how would you continue to support a domestic program and what would it look like?

Does the Department intend to support a high energy physics (HEP) facility in the U.S. after 2010? Would that be necessary given U.S. participation in HEP experiments at the European Large Hadron Collider (LHC)?

Questions for Mr. Faulkner

How does your Office determine the proper balance between shorter-term and longer-term projects in its portfolio?

What steps is the Department taking to ensure that technologies for shorter-term gains in energy efficiency and alternative sources make the transition into the marketplace?

Both the National Academy of Sciences and the American Physical Society have noted that more R&D will be needed in alternative energy sources to help enable a hydrogen economy. How does the budget for renewable energy R&D address this need?

Questions for Mr. Maddox

Using the definitions in Office of Management and Budget Circular A-11, what is the proposed mix of funding in the fiscal year 2006 budget request between basic research, applied research, development, demonstration, and deployment activities for your Office? Please provide the comparable fiscal year 2005 numbers.

What is the rationale for eliminating the oil and gas technology research and development programs at the Department?

Questions for Mr. Johnson

Why are the Nuclear Energy Research Initiative and the Nuclear Energy Plant Optimization programs being eliminated?

What role will other National Laboratories with significant nuclear expertise, such as Argonne National Laboratory, play in nuclear energy R&D after Idaho National Laboratory begins operations?

Please explain the ownership and management structure the Department is proposing for the Next Generation Nuclear Plant. What advantages and disadvantages does this approach have? What happens if the industrial partners fail to fulfill their obligations?

Questions for Mr. Kolevar

How does your Office determine the proper balance between shorter-term and longer-term projects in its portfolio?

What is the rationale for the proposed reduction in the fiscal year 2006 budget for energy storage, given its likely contribution to improving grid stability and enabling the connecting of intermittent sources (such as wind) to the grid?

What is the rationale for cuts to Gridwise and Gridworks, given that these programs were just created last year? What impacts will these cuts have on the ability of these programs

to help modernize the electric grid and turn prototype technologies into useful and widely used technologies for the grid? What is the proper role for the industry in these research efforts?